

Date: Wed, 11 May 94 04:30:22 PDT
From: Ham-Homebrew Mailing List and Newsgroup <ham-homebrew@ucsd.edu>
Errors-To: Ham-Homebrew-Errors@UCSD.Edu
Reply-To: Ham-Homebrew@UCSD.Edu
Precedence: Bulk
Subject: Ham-Homebrew Digest V94 #125
To: Ham-Homebrew

Ham-Homebrew Digest Wed, 11 May 94 Volume 94 : Issue 125

Today's Topics:

*****Ideas sought for a 400MHz oscillator design*****
 LED Replacement - FT5200
 MOSFET Power Amp Schematics/Info ??? (4 msgs)
 Need Help with homebrew repeater design

Send Replies or notes for publication to: <Ham-Homebrew@UCSD.Edu>
Send subscription requests to: <Ham-Homebrew-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Homebrew Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-homebrew".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 10 May 94 17:04:26 GMT
From: unix.sri.com!headwall.Stanford.EDU!w6yx.stanford.edu!
 steven@hplabs.hpl.hp.com
Subject: *****Ideas sought for a 400MHz oscillator design*****
To: ham-homebrew@ucsd.edu

In article <1994May10.081742.173886@zeus.aix.calpoly.edu>
snorris@harp.aix.calpoly.edu (Sean Norris) writes:

>I am working on a senior project that requires the use of a 400MHz sine
>wave local oscillator. This oscillator will be used to construct a portable,
>multi-band frequency converter which can be placed on a handheld amateur
>radio.

>

>My question is: Does anyone have any ideas for generating a 400MHz sinewave?
>It should be capable of delivering about +7dBm into 50 ohms and be able
>to run from a 7.2V battery.

>

>I have looked around a bit, but have yet to find anything that really
>goes up that high in frequency. I have kicked around a few ideas, but I

>wanted to see if anyone here had some good ideas before I started trying
>circuits.

>

>Also, I would rather the circuit use lumped elements (i.e SMD) because I
>want to keep the circuit absolutely as small as possible and I think
>distributed elements would make it too large for what I want.

>

>So if anyone has any circuit ideas or can suggest some good references,

There are two basic approaches to your problem. First is a crystal osc.
and multiplier system. The other way is to use a VCO and PLL system.
In today's world, the PLL/VCO system would probably be the winner since
it would be about the same size as the osc/mult and offer the additional
feature of frequency agility. Consult recent data and applications books
for Fujitsu, Philips and Motorola PLL Synthesizers for details.

Also, you mentioned the need for the oscillator to be a sine wave. It
sounds like you may be driving a balanced mixer in your converter. By
nature, the diodes within a balanced mixer square up an incoming LO
anyway. Those mixers will work just fine being driven by something
less than a pure sine wave and, in fact, I have seen designs where
the mixer was driven directly by an ECL square wave and the mixers
are quite happy.

There may be some basic theory in the new ARRL microwave experimenters
manual.

Good Luck Steve Muther WF6R (also Cal Poly Alum '89)
stevem@w6yx.stanford.edu

Date: Mon, 9 May 94 11:47:55 CDT
From: ihnp4.ucsd.edu!swrinde!gatech!news-feed-1.peachnet.edu!
apollo1.cacd.rockwell.com!newsrelay.iastate.edu!news.iastate.edu!
usenet@network.ucsd.edu
Subject: LED Replacement - FT5200
To: ham-homebrew@ucsd.edu

Hi,

I have a YAESU FT-5200 that has one of the LED's burned out. Is
it possible to replace or does it need to go back to YAESU? Has
anyone done this job themselves?

Thanks

--

Glenn Pearston (515) 294-0032 v
24 Horticulture Hall (515) 294-0730 f
Ames, IA 50011
pearston@iastate.edu
--

Glenn Pearston (515) 294-0032 v
24 Horticulture Hall (515) 294-0730 f
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Date: 10 May 94 14:01:36 GMT
From: psinntp!arrl.org!zlau@uunet.uu.net
Subject: MOSFET Power Amp Schematics/Info ???
To: ham-homebrew@ucsd.edu

Thomas G. McWilliams (tgm@netcom.com) wrote:
: David Sharpe (dws30@p1dbg02cd.amdahl.com) wrote:
: : Subject says it all for the most part. Toying with the idea of building
: : a QRP Amp out of MOSFETS. Any schematics or pointers to information
: : would be greatly appreciated. Want to build one for VHF/UHF and HF when
: : I tackle the code and are up to speed. (Beginner = Low Wattage)

December 1986/QRP Classics has a HF QRP transmitter design by Mike Masterson. It is class C with very good efficiency. The Siliconix application notes characterize the diode as having a slow recovery speed (200 to 400 ns), which means it is too slow to switch on and cause problems at HF. The gate capacitance of cheap FETs is quite high, which makes them tougher to use at higher frequencies.

The November 1989 QST Technical correspondence piece by Hayward is worth reading. Interestingly, a ferrite bead can destabilize a FET amplifier (contrary to some people's opinion). It recommends low impedance, non-inductive terminations for class A amplifiers.

: I've wondered about this too. It seems to me that a power MOSFET
: would not be a good choice for a class C amp. Power MOSFETS have
: a "parasitic" diode that is connected from drain to source. This
: diode is an artifact of the manufacturing process. In most
: applications this diode is reverse biased. But what happens in
: class C service when the drain swings negative (for N channel
: mosfet)? Wouldn't this intrinsic diode tend to clamp negative
: swing on the drain? It would degrade the efficiency and Q of
: the output network, I would think. I guess class A or AB service

: might work.

--

Zack Lau KH6CP/1 2 way QRP WAS
 8 States on 10 GHz
Internet: zlau@arrl.org 10 grids on 2304 MHz

Date: 10 May 94 21:59:20 GMT
From: sdd.hp.com!hp-pcd!hpcvsnz!charlier@hplabs.hpl.hp.com
Subject: MOSFET Power Amp Schematics/Info ???
To: ham-homebrew@ucsd.edu

David Sharpe (dws30@p1dbg02cd.amdahl.com) wrote:
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Here's another interesting article:

"80m Radio Transmitter uses power MOSFETS" (Design Ideas section)
by Robert G Culter (N7FKI) EDN, November 28, 1985, p280.

This uses an MPF910 as a crystal oscillator, followed by an MTP12N10
power amp. He claims the puppy will put out about 45W, and you can
(or could in 1985) build this for less than \$20 (color burst crystal).
One of the interesting features is that he uses the Ciss of the amplifier
as part of the feedback for the oscillator. He also claims that he got
84% efficiency out of the output stage.

I wonder if it chirps; kind of hard for me to believe a 2-stage rig
putting out 45W wouldn't...

--

Charlie Panek KX7L Hewlett Packard Company
charlier@lsid.hp.com Lake Stevens Instrument Division
 Everett, Washington

Date: Mon, 9 May 1994 20:02:39 GMT
From: ihnp4.ucsd.edu!ucsnews!sol.ctr.columbia.edu!howland.reston.ans.net!
europa.eng.gtefsd.com!library.ucla.edu!csulb.edu!csus.edu!netcom.com!
tgm@network.ucsd.edu
Subject: MOSFET Power Amp Schematics/Info ???
To: ham-homebrew@ucsd.edu

David Sharpe (dws30@p1dbg02cd.amdahl.com) wrote:

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Date: Tue, 10 May 1994 05:01:47 GMT
From: pacbell.com!amdahl!juts.ccc.amdahl.com!p1dbg02!dws30@decwrl.dec.com
Subject: MOSFET Power Amp Schematics/Info ???
To: ham-homebrew@ucsd.edu

So best bet is to stick with transistors vs MOSFETs. Any good FTP sites for schematics and usefull pointers?

--

Dave Sharpe Sunnyvale Ca. DWS30@duts.ccc.amdahl.com

Date: Mon, 9 May 1994 19:11:23 GMT
From: fluke!paul@beaver.cs.washington.edu
Subject: Need Help with homebrew repeater design
To: ham-homebrew@ucsd.edu

I'm interested in putting together a simple temporary repeater using two back-to-back transceivers. I would rather not have to tinker with the circuitry inside the radios, so I want a circuit that can detect whether the squelch is open or closed from outside the radio.

One scheme I've seen for doing this takes the discriminator output on the microphone jack and runs it through a high-pass filter. Apparently an FM discriminator which is not receiving a carrier emits some very

high frequency audio and the idea is to detect this "hiss" and use it to determine the state of the squelch.

I have a discrete design for this that I could copy, but I'm wondering if there are any ICs out there that might perform this function for me. It seems like something that might be used in the cellular or commercial radio world.

Anyway, if you know of such a device or have any suggestions of other non-invasive techniques that might work, please pass the info along via email. Thanks in advance.

Paul,
KE7XT

--

Paul Lutt

Domain: paul@tc.fluke.COM

Voice: +1 206 356 5059

UUCP: uunet!fluke!paul

Snail: Fluke Corporation / P.O. Box 9090 / Everett, WA 98206-9090

Date: 10 May 94 16:29:33 GMT

From: dog.ee.lbl.gov!agate!iat.holonet.net!vectorbd!jp11@ucbvax.berkeley.edu

To: ham-homebrew@ucsd.edu

References <CoI6oM.C1C@vectorbd.com>, <Con8rA.5E9@cbnewsm.cb.att.com>,
<2p7ms4\$iba@vanbc.wimsey.com>

Subject : Re: TI 320C26 DSP Eval Kit

there's more info on this in rec.radio.amateur.digital.misc

--

-Jim Lill-

jp11@vectorbd.com

wa2zkd@wb2psi.#wny.ny.usa.na

Vector Board BBS

716-544-1863/2645

GEnie: ZKD

End of Ham-Homebrew Digest V94 #125
